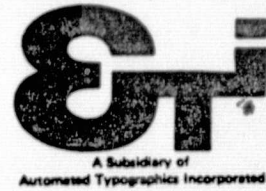


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HOWARD UNIVERSITY

SPACE SYMPOSIUM/76

in cooperation with

National Aeronautics and Space Administration

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Report (Evaluation Technologies, Inc.,
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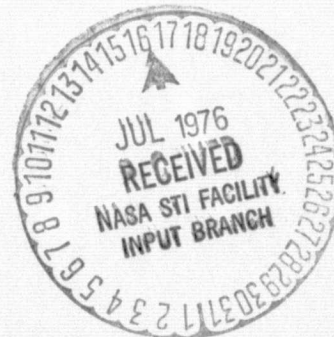
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April 7-9, 1976

FINAL REPORT



Howard University
Washington, D. C. 20059

July 1, 1976

EVALUATION TECHNOLOGIES INCORPORATED

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SECTION I

SYMPOSIUM PREPARATIONS

Introduction

Howard University, in conjunction with the National Aeronautics and Space Administration, conducted a symposium on minority opportunities in the aerospace program April 7-9, 1976, in Cramton Auditorium on the University campus.

The symposium--featuring presentations by subject matter specialists from Howard, NASA, and private industry, and open discussions between these panelists and members of the audience--was intended to encourage minority students to explore career opportunities with NASA and the space industry. On display during the symposium was a NASA exhibit of moon rocks, space shuttles, a lunar module, command module, pace maker, Landsat and other items of interest.

The symposium was attended by students from eleven predominantly minority colleges and universities in and around Washington and the eastern region, and from high schools in five jurisdictions of the Washington metropolitan area.

Planning the Symposium

Planning for the symposium began several months before the April date and resulted in the assumption of certain definite responsibilities by Howard University. Specifically, Howard University undertook to:

- ° provide overall planning and supervision of project implementation;
- ° provide the site, including a 1,500-seat auditorium, 2,500 square feet of exhibit space, and four workshop areas;
- ° handle all correspondence, publicity, program design and program evaluation;
- ° act as the clearinghouse for all arrangements, including the printing and mailing of a final evaluation report;
- ° arrange all support functions, including the subcontracting of some planning and implementation functions and all the clerical functions related to the program;
- ° arrange a luncheon on the final day of the symposium for NASA officials and the representatives of participating colleges and universities;
- ° coordinate arrangements to obtain workshop panelists from NASA and private industry as well as from the university itself;
- ° coordinate travel arrangements for participants;
- ° make media contacts in conjunction with NASA.

To obtain assistance in discharging these responsibilities, Howard University entered into a subcontract with Evaluation Technologies, Inc. (ETI) to provide

logistical support and management service for the various aspects of the symposium from the planning phase through the conduct of the workshops to the final evaluation and report.

A working committee, made up of representatives from the university, NASA, and ETI, thereafter discussed and developed:

- ° a list of symposium objectives;
- ° a list* of resource personnel from whom workshop panelists would be drawn;
- ° a list* of institutions which would be invited to attend.

*(See the Appendix for these lists)

The symposium objectives agreed upon were:

- ° motivating more minority and women students to seek careers in science and engineering;
- ° stimulating interest among faculty and students at predominantly minority colleges in NASA's research programs;
- ° space past, present and future and space age technology;
- ° increasing understanding of NASA's regional distribution system for storage and retrieval of scientific and technical information;
- ° providing opportunities for minority aerospace scientists and engineers to interact with students at the high school and college levels.

The working committee decided that these objectives could best be achieved by exposing participants to workshops conducted so as to elicit free and open discussion, and by providing a visual demonstration of NASA's achievements and ongoing activities.

Given the time available, it was decided that three workshops of one hour each and an exhibit period of the same duration would constitute the most suitable length of participation by student attendees. These activities would occupy the first two days of the symposium.

The themes selected for the three workshops were:

1. Space Exploration and Application
2. Space and Careers for Minorities and Women
3. Space and Minority College Participation

The third and final day of the symposium would be devoted to: the presentation of Workshops 2 and 3, followed by a tour of the Goddard Space Flight

Center, for administrators, counselors, and department heads of all participating institutions; and a special "Presidents Workshop" for the presidents of participating colleges and universities.

Following these broad decisions by the working committee, ETI proceeded to assist Howard University with implementing the detailed preparations. These consisted of:

- ° drafting and mailing all correspondence (including: initial letters of invitation to intended participant institutions and follow-up information letters to them upon acceptance; letters of invitation to resource persons in industry; letter to the Administrator, NASA, inviting him to address the "Presidents Workshop");
- ° preparing a news release for the media;
- ° developing a registration form for attendees;
- ° assembling and mailing information packets for all School Project Officers;
- ° preparing directional signs and an auditorium plan for Cramton Auditorium;
- ° drawing up, designing, and printing the programs for the workshops and the posters for publicizing the symposium in schools;
- ° coordinating travel arrangements for participating institutions;
- ° arranging for the tape recording of all workshop sessions by a commercial company;
- ° any other support service requested by the Howard University Program Coordinator.

During the symposium itself ETI personnel were on hand to provide clerical support at the registration tables and the reception area, to answer the telephones and relay messages, and generally to facilitate the progress of the workshops according to the timetable set.

Section II

SUMMARY OF SYMPOSIUM PROCEEDINGS

Workshop I: Space Exploration and Application

Wednesday, April 7, 1976

Moderator: Dr. Dudley McConnell - NASA

Panelists: Mr. Percy Baynes - NASA
Dr. Herman Thomas - GSFC
Mr. Don Kohler - General Electric
Dr. Luis Gonzales -
Dr. Warren Henery - Howard University

Participants: D.C. Public Schools
Bowie State College
Coppin State College
Montgomery County Public Schools
Fairfax County Public Schools
D.C. Teachers College
Lincoln University
Cheyney State College
Howard University

Thursday, April 8, 1976

Moderator: Mr. Joseph Fuller - NASA

Panelists: Mr. Percy Baynes - NASA
Mr. Wayne Chen - GSFC
Dr. Eugene De Loatch - Howard University
Dr. Jaylee Meade - GSFC
Dr. Taft Broome - Howard University

Participants: Alexandria Public Schools
Washington Technical Institute
Morgan State College
Delaware State College
Federal City College
Prince Georges County Public Schools
University of Maryland, Eastern Shore
Howard University

Summary of Presentations

There was a discussion of the application of NASA technology to the problems of everyday living. NASA's increasing knowledge of the mysteries of space is being used to improve the quality of life here on earth. Examples were provided of how findings in space exploration are influencing food research, medicine, industry, energy conservation, and many other areas of concern to modern man.

A panelist used pictures of Mars taken by the orbiting satellite Mariner IX to explain what we have learned about this neighboring planet. Why study Mars?

Because Earth is part of the solar system, and the interaction of the sun and its planets has vital significance for us as we contemplate the dissipation of our global resources and the means to replace or replenish them.

Another presentation answered the criticism frequently directed at space exploration as "just a very expensive hobby shop for engineers and scientists." NASA does have something to offer towards a solution of the nagging problems of today -- explosive population growth, the food supply, and the energy shortage, to name just three. The information the agency is accumulating has down-to-earth applications in these and other fields of study. While NASA does not claim it can completely resolve the problems facing mankind, it is constantly at work on them.

There were presentations by university professors who are directing and are engaged in NASA-supported research in fields such as pediatrics, cancer, and radiotherapy. They described some of the work being done and the accomplishments made possible by NASA funds, and mentioned that students in this program have been recognized by the award of patents and Technical Briefs for ideas they have developed.

Principal Answers to Questions from Participants

In the question-and-answer exchanges after the presentations, the following principal points were made:

- ° NASA is looking for all the qualified minorities and women it can find.
- ° Minorities and women who contemplate careers in space should not overlook the fact that they can influence the direction of research to some extent. As an example, it was stated that there was little or no research done on sickle cell anemia as long as there were no scientists who were interested in probing the mysteries of this disease.
- ° At present there are three women astronauts in training for future space flights, and there is no reason to believe that more women will not be given equal opportunities for participating in space exploration.
- ° NASA space technology is part of the public domain and is available either free of charge or for a very nominal fee.

Workshop II: Space and Careers for Minorities and Women

Wednesday, April 7, 1976

Moderator: Ms Vondell Payton - NASA
Panelists: Ms Delores Hart - NASA
Mr. Gregory Hayes - GSFC
Ms Edris Stevens - RCA
Dr. George Baker - Howard University
Ms Glenda Taylor - NRCAOE
Participants: D. C. Public Schools
Bowie State College
Coppin State College
Montgomery County Public Schools
Fairfax County Public Schools
D.C. Teachers College
Lincoln University
Cheyney State College
Howard University

Thursday, April 8, 1976

Moderator: Ms Vondell Payton - NASA
Panelists: Ms Ocela Hall - NASA
Mr. Gregory Hayes - GSFC
Mr. Donald Smith - Bendix
Mr. Charles Garrison - Bendix
Dr. George Baker - Howard University
Ms Glenda Taylor - NRCAOE
Participants: Alexandria Public Schools
Washington Technical Institute
Morgan State College
Delaware State College
Federal City College
Prince Georges County Public Schools
University of Maryland, Eastern Shore
Howard University

Summary of Presentations

The common theme linking presentations in this workshop was that NASA and the space industry can use all the qualified minority and women candidates they can get. It is significant that of NASA's total work force of 24,000 employees only 17.4 percent are women and 7.3 percent are minorities. Of the professional work force only 3.1 percent are women and 4.6 percent are minorities.

Panelists from RCA and Bendix described the opportunities offered by their companies and the general qualifications that are required. They listed a

wide variety of careers, such as electronic technicians, computer technicians and programmers, technical writers, draftspersons, etc., that qualified minorities and women can enter.

A panelist from GSFC explained how applicants without college degrees are accepted as technicians at NASA installations. They work in important support roles as engineering aides, math aides, and physical sciences aides. But salary levels for these paraprofessionals are much lower than for professionals with college degrees -- the "full performance level," or highest grade attainable, is GS-11 for paraprofessionals and GS-15 for professionals. So, ultimately, degrees mean dollars!

Other presentations described at length the types of skills sought and the kinds of employment offered by NASA and industry. They underlined the fact that minority and women students with strong backgrounds in math, engineering, and science can expect to face little or no difficulty in finding suitable employment for their talents. But preparation for this must begin with the appropriate orientation and course selection at pre-high school level.

The panelists also talked about the work/study programs available for interested students. NASA, in addition to the Fellowship and Cooperative Education programs, has a summer employment program. Instructions were provided about how and when the qualifying examination for this program can be taken, but it was emphasized that competition is intense for the available openings.

Similarly, GSFC has a "stay in school" program that offers students fifteen hours a week of employment during the school year, converted to full-time employment in the summer. RCA's program brings in students from high schools and colleges near the company's facility at Lanham, Maryland, and gives them work opportunities.

Principal Answers to Questions from Participants

Major points emerging during the question-and-answer periods following presentations by the panelists were:

- ° Astronaut training is on the wane. Instead, scientists and technicians are being trained for the space shuttle program.

- ° Since 46 percent of NASA's jobs are in science and engineering, it is in these fields that the greatest opportunities for minorities and women exist and will continue to be available. But even in an age of technology there will always be the need for staff people in supporting roles -- attorneys, personnel specialists, technical writers, accountants, etc.
- ° NASA has an active "upward mobility" program that constantly seeks out promising employees who can make their way up the ladder from clerical to paraprofessional to professional status.
- ° All Federal agencies, including NASA, have some kind of social objective program or programs under which deserving students can find employment. But it is essential to ascertain long in advance what requirements applicants must meet, and to comply with these requirements ahead of the anticipated date of employment.
- ° Students seeking jobs under the "stay in school" program must be cleared through their State Employment Office, since this program is based on economic need. Direct summer employment, on the other hand, has nothing to do with need; it is based on the results of an examination.
- ° There are plenty of jobs at the entry level in the space industry, and companies are realizing that they must readily increase the supply of bright youngsters coming through the pipeline. It is not enough to go recruiting on career days in the schools; students must be motivated from the elementary and junior high school years.

Workshop III: Space and Minority College Participation

Wednesday, April 7, 1976

Moderator: Mr. Harrison Allen - NASA
Panelists: Mr. Jurgen Pohly - NASA
Ms Carmen Brock-Smith - Howard University
Mr. Kevin Wood - Howard University
Participants: D.C. Public Schools
Bowie State College
Coppin State College
Montgomery County Public Schools
Fairfax County Public Schools
D.C. Teachers College
Lincoln University
Cheyney State College
Howard University

Thursday, April 8, 1976

Moderator: Mr. Harrison Allen - NASA
Panelists: Dr. Alvin Anderson - NASA
Mr. James Talley - Howard University
Ms Jamilla Wiltshire - Howard University
Participants: Alexandria Public Schools
Washington Technical Institute
Morgan State College
Delaware State College
Federal City College
Prince Georges County Public Schools
University of Maryland, Eastern Shore
Howard University

Summary of Presentations

Speakers from NASA explained the operation of the agency's joint program with universities in the country. This program has been successfully conducted for several years, but the beneficiaries traditionally have been those big schools heavily oriented to science and engineering. As a result, talented minority students have largely been neglected. This situation has now been corrected by the extension of the program to minority schools.

The principal elements of NASA's University Affairs Program that benefit minorities are:

- research grants
- aerospace fellowships

- cooperative education
- pre-cooperative education

Research grants of approximately \$20,000 each are awarded to universities for research projects that are relevant to NASA's purposes and have clearly discernible merit. Grants are awarded for one year but can be extended.

Aerospace fellowships are designed to encourage minorities and women to embark on careers in science and engineering. Students awarded these fellowships are selected by the college or university at which they are enrolled. They must have a record of academic excellence and at least two years of undergraduate work to qualify. Fellowships include: \$1,000 for the institution to administer the fellowship, and \$2,500 and two summers of employment at a NASA field center for the student.

The Cooperative Education program is intended to provide students working toward a baccalaureate with related work experience. They graduate in five instead of four years, spending the additional year before graduation in full-time employment. The school at which they are enrolled must be a participant in the cooperative program with NASA. After graduation they are eligible for non-competitive entry into the U.S. Civil Service roster and are also provided with employment opportunities at NASA.

The Pre-cooperative Education program takes students in their junior year at high school and gives them employment as aides at a NASA center. In their senior year NASA helps them to choose the right courses and to fill out applications to appropriate colleges participating in the cooperative education program.

Following the speakers from NASA, the engineering counselor at Howard explained the working of the Fellowship, Cooperative Education, and Pre-cooperative Education programs at the university.

Two graduating seniors at Howard provided practical illustrations of the advantages to be gained from these programs by describing their experiences in the work environment and the benefits they had personally reaped. They spoke as participants in the Cooperative Education and Fellowship programs who had worked at NASA installations (GSFC and the Lewis Research Center) and in private industry (COMSAT, IBM).

Principal Answers to Questions from Participants

During the question-and-answer sessions that followed, these were the major items of information that emerged:

- ° There are fifty minority universities at present participating in joint programs with NASA.
- ° The principal field of interest to NASA is engineering. Then follow such fields as math and physics, management, procurement, medicine (life sciences), and law (general counsel).
- ° NASA is interested in hiring medical doctors at its centers in Ames, California, and Houston, Texas.
- ° The courses for which NASA will pay under the Fellowship program must be pertinent to NASA's own purposes and objectives. For courses not considered pertinent, the student must pay his own way.
- ° Students in the Fellowship program are free to enroll in any school near the NASA field center where they work. NASA will pay, provided the courses are relevant, because the agreement is essentially between a NASA field center and a NASA employee, not between NASA and the school.
- ° NASA has only limited opportunities for graduates in the biological sciences, psychology, philosophy, etc. The agency's principal opportunities are in science and engineering.
- ° Once NASA has accepted you for employment, it considers it has an investment in you and will give you every encouragement to attend graduate school. You are granted time away from the job with full pay and the freedom to take any course pertinent to your job. Many employees at NASA have done as much as eighty percent of their graduate study at NASA's expense.

Workshop I: Space and Minority-College Participation

Friday, April 9, 1976

Moderator: Mr. Harrison Allen - NASA
Panelists: Mr. George Baker - Howard University
Mr. Barry Jackson - Howard University
Participants: Those attending were principally Junior and Senior High School faculty members.

The first presentation, by the moderator, described NASA's joint programs with universities and schools. It was the same presentation as that given at the beginning of Workshop III on Wednesday and Thursday, April 7 and April 8.

The first panelist followed with a review and description of the MITE and PREFACE programs at Howard University. The MITE (Minority Introduction to Engineering) program brings high school students onto campus for one or two weeks to give them an idea of what they can expect to find if they elect to enter the school of engineering with the intention of making a career in that field. They are told about course requirements, taken through the engineering laboratories, and escorted on field trips. About forty students are brought in each year under this program.

The PREFACE program, intended for students who have gained admission to the university, has two purposes: it prepares them for entering the school of engineering, and it introduces them to the world of work through the Cooperative Education program. A classroom introduction to engineering and science is followed by actual work experience at one of several participating institutions--Argonne National Laboratory, Brookhaven, GE, and NASA--where students are given paid employment for up to six weeks.

The second panelist, a graduating senior at Howard on a NASA Fellowship, emphasized that engineering is hard work but that there are ample rewards for the diligent student. He described his work experiences as a summer employee at Argonne, GSFC, and the Lewis Research Center, and concluded by saying that with six or seven job offers already awaiting his consideration, he still hoped to work for NASA, even though the particular position he had in mind would pay \$3,000 less than he would get outside.

The question-and-answer session did not stimulate much participation by the audience. However, two interesting points were brought out during this part of the workshop:

- ° No matter how brilliant or original the work of scientists and engineers may be, it is of no value unless it is communicated to others. The end product of all research activity is a report. Therefore, students should be made to understand that writing skills and English language ability are just as important as good grades in science and math.
- ° Engineering graduates should not have any difficulty finding jobs, either with the Government or with private industry. The offers being made to graduates this year range up to \$15,600 for men but up to \$16,500 for women. Women engineers are being offered more because they are most in demand.

Workshop II: Space and Careers for Minorities and Women

Friday, April 9, 1976

Moderator: Ms Vondell Payton - NASA

Panelists: Mr. Lynwood Randolph - NASA
Dr. Taft Broome - Howard University
Mr. Arnold Roane - GE
Mr. Richard Backe - Sperry Rand

Participants: Those attending were principally Junior and Senior High School faculty members.

The first panelist opened with a description of NASA's future programs in six principal areas -- the utilization of space, the exploitation of space technology on earth, the exploration of the solar system, the exploration of the universe, operating in space, and effective air transportation. He touched on such subjects as solar energy, space colonies, the space shuttle, and global communications as some of the futuristic projects to which NASA is now committed.

The next speaker, an assistant professor at Howard and a NASA fellow, described some of the problems of large area space structure and the ingenious techniques being developed to transport structures into space.

The workshop moderator linked these two presentations to NASA's continuing and growing need for qualified people to accomplish all its ambitious projects. Not only are scientists and engineers wanted--though admittedly the highest priority is for graduates skilled in these disciplines--NASA also needs support personnel, writers, administrative managers, budget analysts, attorneys, experts in business administration, machinists, technicians, to name just a few of the job categories in demand. High school counselors should pass this message on to the young people they advise, making them aware of the opportunities for rewarding careers that NASA offers in the expanding space program.

The representative from GE continued in the same vein, emphasizing the many openings in the aerospace industry available to promising young women and minority candidates. Industry has a very definite vested interest in attracting young talent, he said. It used to be the practice for companies to wait till youngsters had graduated and then to vie for the cream of the crop. As a result, they consistently attracted those who were already motivated because their

parents were motivated. Over the years this has created such a disparity between the privileged and the underprivileged that the supply of talented minority youngsters is pathetically low. Industry has now abandoned this practice in favor of going into the schools--even at the elementary level--to motivate children by showing them films and talking to them about the new scientific wonders that affect their lives (communication satellites, for example). At the high school level students are brought into the plant so they can see what is going on and question the engineers and scientists at work there. In this way talented students are motivated to enter college and to make definite career choices so that industry is assured of an increasing supply of qualified candidates.

The last panelist spoke very briefly, endorsing all that those before him had said and stressing the very distinct edge that minority and women engineers now have. But he was quick to add that engineering can be a lifelong profession only if the engineer makes it so -- by taking advantage of the continuing education programs that companies offer their employees to nurture and improve their skills, rather than by relying on some affirmative action program that got them in when they started.

There were no questions asked by participants in this workshop.

Workshop for Heads of Colleges and Universities

Friday, April 9, 1976

Speaker: Dr. John F. Clark, Director, GSFC

Participants: Dr. William P. Hytche - University of Maryland, Eastern Shore
Dr. Carl Anderson - Howard University
Mrs. Winifred Harris - Delaware State College
Dr. Samuel L. Myers - Bowie State College
Dr. Samuel Sullican - D.C. Teachers College
Dr. Percy Pierre - Howard University
Mr. Jurgen Pohly - NASA
Mrs. Ruth Bates Harris - NASA
Dr. Harriett Jenkins - NASA
Mr. Miles Fisher - National Association for Equal Opportunity in Higher Education
Dr. James Lawson -

Dr. John F. Clark, Director of the Goddard Space Flight Center, described in broad terms the total thrust of NASA's programs. He explained how the United States had taken a giant step forward with the accomplishment of the Apollo program, but that space exploration was intended for the benefit of mankind, not as an end in itself. There was plenty of work to be done on our own planet, he said.

NASA's principal program thrusts are:

- (1) exploration of the solar system,
- (2) the uses of space,
- (3) the space shuttle,
- (4) improvements in the field of aeronautics,
- (5) technology transfer.

Dr. Clark emphasized that the main purpose of space flights was to provide a vantage point of observation where we can do things which for one reason or another cannot be done on earth.

To illustrate this he presented highlights of NASA's ongoing activities in space and the application of space technology to such fields as weather forecasting, flood control, food and agriculture, the energy shortage, and even medicine.

Dr. Clark's presentation was accompanied by several slides made from pictures taken by NASA's orbiting satellites.

After the presentation the group adjourned for lunch, where informal exchanges with Dr. Clark continued.

SECTION III

POST SYMPOSIUM EVALUATION AND RECOMMENDATIONS

1. Introduction.

In order to have a basis to evaluate the Howard University Space Symposium/76 that would serve as a guideline for more effective future conferences, questionnaires were prepared and coordinated with Howard/NASA Pre-Conference Coordination Committee. The questionnaire was comprised of one subjective question and nine objective questions. The evaluation questionnaire was designed to be objective and simple, yet covering as many aspects of the activity as possible.

2. Analysis.

a. Following is an account of the tabulation of the questionnaire which was answered by 139 persons:

1. Did you derive any benefit from attending this Symposium?

125	14	0
Yes <u>90 %</u>	No <u>10 %</u>	Invalid <u>0 %</u>

2. Was its content of value to you or of little or no value to you?

Valuable <u>89 (64%)</u>	Little Value <u>47 (34%)</u>	No Value <u>3 (2%)</u>
--------------------------	------------------------------	------------------------

3. What is your general evaluation of the individual presentations during the symposium?

Adequately presented <u>24 (89%)</u>	Inadequately presented <u>15 (11%)</u>
--------------------------------------	--

4. Rank order the workshops you attended in the order of interest to you.

	Ratio	1st	2nd	3rd	4th
Space Technology and Careers		20	18	22	24
Space Past, Present and Future		16	20	28	20
NASA Display		32	19	18	15
Space and Minority College Participation		16	27	16	25
Invalid		55	55	55	55

5. Did you consider the physical facilities adequate or inadequate?

Adequate <u>112 (81%)</u>	Inadequate <u>21 (15%)</u>	Invalid <u>6 (4%)</u>
---------------------------	----------------------------	-----------------------

6. If another activity such as this were to be held in the future would you recommend that people attend it?

Yes <u>122 (88%)</u>	No <u>8 (6%)</u>	Invalid <u>9 (6%)</u>
----------------------	------------------	-----------------------

7. Which other topics for workshops would you like to have included in future symposia? If you select one then list the one that it should replace.

Recommend: Medicine, Space Exploration, Minority jobs, Law, Computers, Health, Aero-space, Psychology, More NASA Displays, Physical Exercise, Courses for H.S. Students, Physics, More Exhibits, Space Careers, Job Information, Biology, Chemistry, Movies,

be included as a workshop.

No recommendation, format is satisfactory 99.

Delete

NASA Display	<u>20</u>
Space Past, Present and Future	<u>14</u>
Space Technology	<u>12</u>
Space and Minority College Participation	<u>9</u>
Invalid	<u>89</u>

8. Make any comments or suggestions that you feel would help to make this type of symposium more in line with the needs of people in your category.

My Category:

- a. Faculty
University 4 High School 9
- b. Staff
University 1 High School 0
- c. University Students 22
- d. High School Students 6
- e. Jr. High Students 5
- f. Other 3
Invalid 32

Comments: See Summary

Suggestions: See Summary

9. What has been your previous contact with NASA?

General information literature 43

Media (print, radio, TV) 53

New Technology Publications

Tech Briefs 17

Tech Computations 4

New Technology Dissemination

RDC (Regional Dissemination Center) 2

COSMIC (Computer Software Management and Information Center) 5

Public Sector Application Teams 1

Application Engineering Projects 8

Invalid 63

10. Do you now understand how you can seek a career in Space Technology in:

NASA Yes 68 (49%) No 11 (8%) Invalid 60 (43%)

Private Industry Yes 51 (37%) No 16 (12%) Invalid 72 (51%)

b. A summary of the pertinent sub. five questions was:

(1) Congratulations to the organizers and thank-you for letting that individual be one of the selected students.

(2) Would like to see people who work in a "hands on" capacity participate in the workshops.

(3) Have an astronaut speak at the Symposium.

(4) Cover Aero-Space Medicine.

(5) Provide more on the general aspects of Aero-Space.

(6) Have one workshop specifically for High School Students so that the focus will be on their requirements for the field.

(7) Have space suits as a part of the NASA display.

(8) The entire program was too long. Lunch break was too long.

(9) Have more students in NASA programs, to participate, because they can relate to students better.

(10) Workshops were not conducted as workshops, but were more like a lecture, very little interaction.

(11) Enjoyed symposium because it gave students a chance to see how NASA functions.

(12) Symposium was very informative and has helped in formulating career plans.

(13) Symposium provided a greater insight as to the type of engineering courses available to minorities.

(14) This was a very worthwhile program and should be very beneficial to students. The rooms that the workshops were held in were too close together. Voices carried from one workshop to the other.

3. Symposium Attendance.

The following is a breakdown of attendance by date for the Symposium:

Persons Attending the Symposium by Day

<u>Institution</u>	<u>April 7th</u>	<u>April 8th</u>	<u>April 9th</u>	<u>Total</u>
University of Maryland		9		9
Bowie State College	11			11
Delaware State College		14		14
Cheyney State College	17			17
Howard University	13	6	2	21
D.C. High Schools	64	0	7	71
Maryland High Schools	61	47		108
Virginia High Schools	32	8	1	41
RCA	2			2
CEMCO			1	<u>1</u>
Grand Total	200	84	11	295

Note: This count is based on registration cards turned in. Through headcounts taken during the day it is estimated that attendance was approximately 25% higher.

4. Conclusion.

There is every reason to believe that the Howard University Space Symposium was successful. Not only can this conclusion be derived from the answers given by the participants in the evaluation questionnaires, a summary of which is included, but by the many personal statements offered by the participants during and after the Conference. The total response of the educational community to this activity was not extraordinarily high, particularly after a fast start on the first day, but the quality of the group attending more than compensated for the small number of participants on the second and third day.

B. EVALUATION BY RESOURCE PERSONNEL

A questionnaire designed to obtain the reactions of resource personnel to the Symposium was sent to 22 panelists. Of these, ten responded by completing and returning the questionnaire; four were panelists on Space Exploration and Application, four on Space and Careers for Minorities and Women, and two on Space and Minority College Participation.

An analysis of their responses and comments follows.

1. Accomplishment of Workshop Objectives. How do you evaluate the program in terms of these objectives being accomplished:

	<u>Excellent</u>	<u>VGood</u>	<u>Sat</u>	<u>UnSat</u>	<u>Don't Know</u>
(a) To explore the question "How can aerospace activities be made more relevant to the current problems faced by minorities and women."	1	1	4	2	2
(b) To motivate more minority youths and women to select science and engineering as viable career choices.	2	3	3	1	1
(c) To help NASA's efforts to recruit more minorities and women into its work force.	1	1	3	4	1
(d) To stimulate a greater interest among minority professors and students in NASA's research programs at predominantly minority colleges.	2	1	4	2	1
(e) To provide opportunities for minority aerospace scientists and engineers to interact with the community, particularly with youths at the college and high school level.	3	2	3	2	-
(f) To raise the level of understanding of NASA's Regional Distribution System for storage and retrieval of scientific and technical information.	-	2	2	2	4

2. Significant Strengths. The most significant strengths of the program were listed as:

- ° the free discussion of problems between panelists and participants.
- ° well-informed panelists.
- ° The interest of all participants (sponsors, students, counselors, and resource personnel).
- ° The interaction between minority scientists and engineers and the students attending.

3. Significant Weaknesses. The most significant weakness of the program was a lack of organization, as exemplified by such comments as:

- ° unsatisfactory scheduling - afternoon sessions poorly attended.
- ° noise problems from rooms being too close together.
- ° scheduling was confusing, and last minute changes made matters worse.
- ° lack of planning was evident in the short notice given to participants and the spotty attendance at the workshops.
- ° insufficient time to pursue areas of expressed interest.
- ° insufficient involvement of top university officials.

4. Rating of Workshops

Most useful: Space and Careers - 3

Least useful: Space Exploration - 2
Space and Minority College - 1

No comment or invalid response - 7

5. Evaluating Workshop Features

(a) Length of workshop: Adequate - 7
Too short - 3

(b) Reading materials: Helpful - 3
Adequate - 3
Inadequate - 4

(c) Facilities and Arrangements: Adequate - 5
Inadequate - 4
Good - 1

(d) Other comments: ° no time for audience participation
° poor general supervision to prevent disturbances during sessions
° social contagion of students made Howard an inappropriate choice as setting

6. Rating of Panelist's Own Workshop

Excellent - 1
Very Good - 5
Satisfactory - 3
Invalid - 1

7. General Comments: [See Recommendations that follow]

8. Sponsorship and Frequency of Future Workshops. The consensus was that Howard should indeed sponsor future workshops; eight respondents said annually, two said at least twice a year.

RECOMMENDATIONS

The following recommendations summarize the observations of those concerned with the organization, management, and conduct of the symposium:

1. Planning the program should allow participants at least ninety days to arrange for their attendance.
2. The academic units at the host university should spell out the extent of their participation, including both faculty support and student attendance. They should be required to deliver students to the program and provide a written plan of how they mean to do this as part of the agreement with NASA.
3. Planning should begin approximately six months prior to the symposium date and should include representatives from local school districts and colleges and universities near the host institution.
4. Workshops should be broken down into smaller groups to permit more informal discussions between participants and NASA representatives.
6. Better arrangements and more vigorous PR efforts are needed to attract larger audiences. A more effective means must be developed to publicize the symposium at the host institution.
6. Advance information of workshop content would help to make the discussions more lively and interesting than they were.

APPENDIX

A. List of Letters

- | | |
|--|--------------------------|
| 1. From Dr. James E. Cheek
President, Howard University | to Heads of Institutions |
| 2. From Mr. Samuel Hall | to School Principals |
| 3. From Dr. John F. Clark
Director, GSFC | to Dr. James E. Cheek |
| 4. From Mr. Barry Morris
Associate Superintendent for School
Services, Fairfax County Public Schools | to Dr. James E. Cheek |
| 5. From Dr. Andrew Billingsley
President, Morgan State University | to Dr. James E. Cheek |
| 6. From Dr. William P. Hytche
Acting Chancellor, University of
Maryland, Eastern Shore | to Dr. James E. Cheek |
| 7. From Mr. Vincent E. Reed
Superintendent of Schools,
Washington, D.C. | to Mr. Samuel M. Hall |

B. Publicity

1. Text of news release
2. News item in Right On -- weekly Howard University news sheet

C. List of Names and Addresses of Resource Persons from Howard University, NASA, and Private Industry

D. List of Participating High Schools, Colleges, and Universities

E. Copies of Programs for Workshops Held on April 7, April 8, and April 9

F. Copies of Questionnaires Used for Evaluation by Participants and Resource Personnel

G. Statement of Costs Incurred by ETI to May 28, 1976

Dear

Howard University, in cooperation with the National Aeronautics and Space Administration (NASA), is conducting three one-day symposia for selected secondary schools, colleges, and universities in the eastern region April 7-9, 1976.

The symposia, which will be held on the Howard University campus, will feature speakers from NASA, Howard, and private industry, and will focus on the following themes:

- motivating more minority and women students to seek careers in science and engineering;
- stimulating interest among faculty and students at predominately minority colleges in NASA's research programs;
- space past, present, and future and space age technology;
- increasing the understanding of NASA's Regional Distribution System for storage and retrieval of scientific and technical information;
- providing opportunities for minority aerospace scientists and engineers to interact with students at the high school and college levels.

The presentations will be supplemented by informative NASA exhibits relating to the space program and its achievements.

I extend a cordial invitation to interested students and faculty members from _____ to the symposium on April , 1976, and would like to know no later than March 15, 1976, whether they plan to attend. We will arrange to defray the cost of round trip bus transportation from _____ to Washington, D.C., and will provide you with further details after receiving your acceptance.

Sincerely,

Dr. James E. Cheek
President



HOWARD UNIVERSITY

WASHINGTON, D.C. 20059

DIVISION OF STUDENT AFFAIRS
OFFICE OF CAREER PLANNING
AND PLACEMENT

March 19, 1976

Dear Principal:

As you have already been informed by the Superintendent of Schools, the Howard University Space Symposium, 1976, is to take place April 7-9, 1976 on this campus. We look forward to participation by students and faculty from your school. This program is directed at minority and women students who have high interest or aptitude in mathematics and science. Either sophomores, juniors or seniors are encouraged to attend.

Lunch for participants will be provided free of charge and transportation costs will be reimbursed to the participating institutions or jurisdictions. Additional information on the symposium will follow in the next few days, so that you will have a complete program of the planned activities before the actual starting date.

Should you have questions concerning this program, please contact Mr. Leon E. Johnson on 525-5818 who is providing symposium management service for Howard University or myself at 636-7513.

Sincerely,

Samuel M. Hall, Jr.
Program Coordinator

Goddard Space Flight Center
Greenbelt, Maryland
20771

1976 APR -5 AM 11:32

TEL 10130

APR 1 1976

RECEIVED
PRESIDENT'S OFFICE
HOWARD UNIVERSITY

Reply to Attn of: 100

Dr. James E. Cheek
President
Howard University
Washington, D. C. 20059

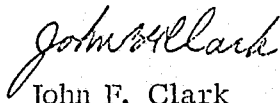
Dear Dr. Cheek:

I accept with pleasure the invitation to join Dr. Anderson on April 9, 1976, the final day of the Howard Space Symposium - 1976.

I understand from Dr. Jenkins that Dr. Fletcher wishes me to represent the Agency during the informal discussions with the presidents of participating colleges and universities. This I shall be delighted to do.

I regret that your trip overseas will prevent our meeting personally on this occasion, but I do trust your trip will be successful. Again, I look forward to participating in this important symposium.

Sincerely,



John F. Clark
Director

cc: Dr. Harriett G. Jenkins - NASA Hq.
Mr. James R. Mundy - GSFC

Fairfax County Public Schools

10700 Page Avenue, Fairfax, Virginia 22030

March 23, 1976

RECEIVED
PRESIDENT'S OFFICE
HOWARD UNIVERSITY

1976 MAR 25 AM 10:30

Dr. James E. Cheek
President
Howard University
Washington, D. C. 20059

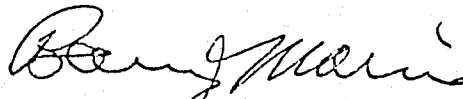
Dear Dr. Cheek:

Thank you very much indeed for your invitation for us to participate in the forthcoming air and space symposium on April 7. We would like very much to have our students participate in this symposium and take advantage of your generous offer to defray the cost of round trip transportation.

We are beginning immediately to identify students and teachers who would participate in this program and will look forward to receiving additional details so that we can complete the selection.

Thank you for making this opportunity available to us.

Sincerely,



Barry Morris
Associate Superintendent
for School Services

BM/clr

MORGAN STATE UNIVERSITY

BALTIMORE, MARYLAND 21239

OFFICE OF THE PRESIDENT

March 22, 1976

RECEIVED
PRESIDENT'S OFFICE
HOWARD UNIVERSITY

1976 MAR 23 AM 10:47

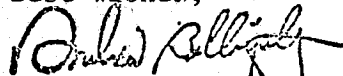
Dr. James E. Cheek
President
Howard University
Washington, D. C. 20059

Dear Dr. Cheek:

Thank you for your correspondence of March 18, in which you invited Morgan State University to the symposium on April 8, 1976 in connection with the National Aeronautics and Space Administration (NASA).

I am referring this to our Vice President for Academic Affairs, Dr. Horace Judson. He will be in touch with Mr. Hall and all other correspondence may be forwarded to him.

Best wishes,



Andrew Billingsley
President

jgg

cc: Dr. Horace Judson

Sam Hall



UNIVERSITY OF MARYLAND
EASTERN SHORE
PRINCESS ANNE 21853

OFFICE OF THE CHANCELLOR

1976 APR 16 AM 10:14

RECEIVED
PRESIDENT'S OFFICE
HOWARD UNIVERSITY

April 14, 1976

Dr. James E. Cheek
President
Howard University
Washington, D.C. 20059

Dear Dr. Cheek:

Thank you so much for the invitation to attend the workshop which was held on Friday, April 9. The workshop was very enjoyable and informative. The materials presented and suggestions made will be extremely helpful in our attempts to broaden and improve our scientific programs at UMES.

I regret, however, I had to leave prior to being served lunch (smile). Nevertheless, it was a very interesting and educational experience which enhanced my perspective on the involvement of minority colleges in the space program.

Sincerely,

William P. Hytche
Acting Chancellor

WPH:bw



PUBLIC SCHOOLS OF THE DISTRICT OF COLUMBIA
OFFICE OF THE SUPERINTENDENT
PRESIDENTIAL BUILDING
415 12TH STREET, N.W.
WASHINGTON, D.C. 20004

SUPERINTENDENT

(202) 724-4222

March 23, 1976

Mr. Samuel M. Hall
Program Coordinator and Director of
Career Planning and Placement
Howard University
2400-6th Street, N. W.
Washington, D. C. 20059

Dear Mr. Hall:

This is to confirm your telephone conversation with Mrs. Irene Rich of my staff.

We appreciate the kind invitation to participate in the symposia scheduled for April 7, 1976.

The following students and faculty members will participate:

Randall Aero-Marine Science Program
Mr. Edward Wells, Principal
Telephone: 724-4859
Participation: 20 students
4 faculty members

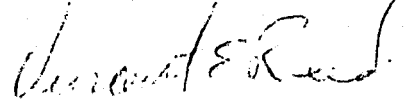
Ballou High School of Science and Mathematics
Dr. Reuben Pierce, Principal
Telephone: 767-7071
Participation: 20 students
4 faculty members

I also understand that there may be additional student spaces available.

Mr. Edward Wells, Principal of Randall Aero-Marine Science and Dr. Reuben Pierce, Principal of the Ballou High School of Science and Mathematics will await word from you as to the transportation arrangements.

Thank you for the opportunity to involve our students and faculty.

Sincerely,



Vincent E. Reed
Superintendent of Schools

VER:vp

cc: Mr. Wells
Dr. Pierce
Mr. Rice
Dr. Johnson

March 10, 1976

NEWS RELEASE

The aerospace program and minority opportunities will be the focus of three one-day symposia to be held at Howard University, Washington, D.C., April 7-9, 1976.

The symposia, which will feature workshops and an extensive exhibit, will aim at encouraging minority students to explore careers with NASA and the space industry.

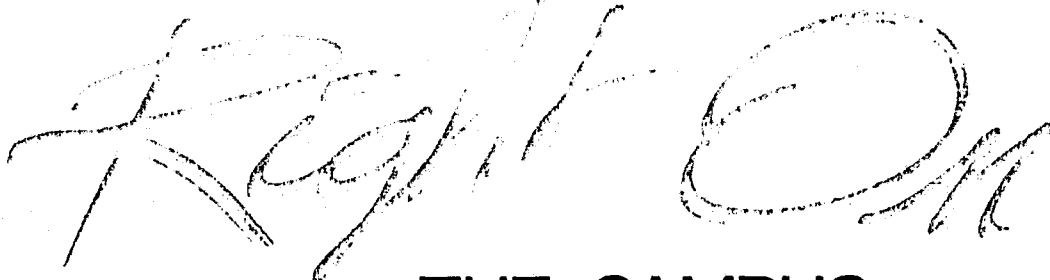
High school students from five jurisdictions in the Washington metropolitan area, and college and university students from 10 predominantly minority institutions in Washington and the eastern region have been invited to attend.

Faculty members from all the educational level represented will participate in the symposia.

The objectives of the program are:

- o motivating more minority and women students to seek careers in science and engineering;
- o stimulating interest among faculty and students at predominantly minority colleges in NASA's research programs;
- o space past, present, and future and space age technology;
- o increasing the understanding of NASA's Regional Distribution System for storage and retrieval of scientific and technical information;
- o providing opportunities for minority aerospace scientists and engineers to interact with students at the high school program and its achievements.

The program coordinator at Howard is Samuel Hall, _____ who may be contacted at (202)636-7513 for further information.



THE CAMPUS

Vol. 6, No. 9

March 29, 1976

AEROSPACE CAREER SYMPOSIUM PLANNED

A three-day symposium on minority opportunities in the aerospace program will be held here April 7-9, in cooperation with the National Aeronautics and Space Program.

The purpose of the symposium is to encourage minority students to explore careers with NASA and the space industry.

University and college students from 11 predominantly minority institutions in Washington and the eastern region, as well as high school students from five jurisdictions in the Washington metropolitan area have been invited.

Some of the objectives of the program are: the motivation of more women and minority students to seek careers in science and engineering; the stimulation of interest in NASA's research programs; the discussion of space age technology; and the provision of the opportunity for minority aerospace scientists and engineers to meet with students.

The program coordinator at Howard is Samuel Hall, Director of Career Planning and Placement. He can be reached for further information at 636-7513.

CHALLENGE FUND DRIVE KICKS-OFF

The 1976 Challenge Fund Campaign, with a goal of \$250,000, will officially kick-off on Tuesday. President James E. Cheek has announced that this year's co-chairmen will be Dr. Thomas F. Johnson, Associate Dean of the Graduate School; Dr. Marion Mann, Dean of the College of Medicine; and Dr. Robert Owens, Dean of the College of Liberal Arts.

The 1975 campaign was the most successful in the history of the Fund as the goal of \$225,000 was exceeded by \$10,000, according to 1975 co-chairmen, Dr. Leonard Altemus, Dr. Evans E. Crawford, and Dr. Clifton R. Jones.

President Cheek said of the annual campaign, "I cannot overstress the importance of the need for Howard University to diversify its sources of funding as well as to advance the notion that everyone who works here has a personal responsibility for contributing to this effort and has a personal stake in its outcome."

According to the report of the 1975 campaign, the percentage of participation was 56 percent with the average size gift at \$85.69. The total money raised was \$235,383.07.

RESOURCE LIST

Ms Muriel Funches
Office of Career Planning and Placement
Howard University
Washington, D.C. 20059

Dr. Warren Henery
Department of Physics
Howard University
Washington, D.C. 20059

Professor George Baker
Director of Cooperative Education
Howard University
Washington, D.C. 20059

Ms Carmen Brock-Smith
School of Engineering
Howard University
Washington, D.C. 20059

Mr. Kevin Wood
School of Engineering
Howard University
Washington, D.C. 20059

Ms Glenda Taylor
Counsel on Minority Engineers
21st and Pennsylvania Avenue, N.W.
Washington, D.C.

Professor Eugene DeLoatch
School of Engineering
Howard University
Washington, D.C. 20059

Dr. Taft Broome
School of engineering
Howard University
Washington, D.C. 20059

Mr. James Talley
2601 16th St., N.W.
Howard University
Washington, D.C. 20059

Ms Jamilla Wiltshire
1825 New Hampshire Ave., N.W.
Howard University
Washington, D.C. 20059

Resource List (Cont'd)

Mr. Percy Baynes
National Aeronautics and Space Administration Headquarters
Code MHE
600 Independence Avenue, S.W.
Washington, D.C. 20546

Mr. Don Kohler
General Electric Space Systems
530 Herzel Place
Beltsville, Maryland 20705

Ms Vondell Payton
National Aeronautics and Space Administration Headquarters
Code-QP-1
600 Independence Avenue, S.W.
Washington, D.C. 20546

Ms Delores Hart
National Aeronautics and Space Administration Headquarters
Code ACE
600 Independence Avenue, S.W.
Washington, D.C. 20546

Mr. Gregory Hayes
Goddard Space Flight Center
Code 220
Greenbelt, Maryland 20771

Ms Edris Stevens
RCA Service Co.
8855 Annapolis Road
Lanham, Maryland 20801

Mr. Harrison Allen
National Aeronautics and Space Administration
Lewis Space Flight Center
Cleveland, Ohio 44135

Mr. Jurgen Pohly
National Aeronautics and Space Administration
Code P
600 Independence Avenue, S.W.
Washington, D.C. 20546

Mr. Wayne Chen
Goddard Space Flight Center
Code 703
Greenbelt, Maryland 20771

Resource List (Cont'd)

Mr. Joseph Fuller, Jr.
National Aeronautics and Space Administration Headquarters
Code AE
600 Independence Avenue, S.W.
Washington, D.C. 20546

Ms. Ocela Hall
National Aeronautics and Space Administration
Code UI
600 Independence Avenue, S.W.
Washington, D.C. 20546

Mr. Charles Garrison
Bendix Field Engineering Coordinator
9250 Route 108
Columbia, Maryland 21043

Mr. Richard Scilafford
Code 861
Goddard Space Flight Center
Greenbelt, Maryland 20771

Mr. John Tarpley
Code 755
Goddard Space Flight Center
Greenbelt, Maryland 20771

Mr. Richard Bache
Sperry Rand Corporation
Code 310
Goddard Space Flight Center
Greenbelt, Maryland 20771

Dr. Herman Thomas
Code 922
Goddard Space Flight Center
Greenbelt, Maryland 20771

Ms Valerie Thomas
National Aeronautics and Space Administration Headquarters
Code ERN
600 Independence Avenue, S.W.
Washington, D. C. 20546

Mr. Arnold F. Roane
Strategic Planning Group
General Electric Company
Fairfield, Connecticut 06431

Resource List (Cont'd)

Mr. Lynwood Randolph
National Aeronautics and Space Administration Headquarters
Code R
600 Independence Avenue, S.W.
Washington, D. C. 20546

Dr. Linden Saline
Manager of Professional Development Operations
General Electric Company
P.O. Box 368
Croton-on-the-Hudson, New York 10520

Dr. Herbert Schulke [LTG, USA (Ret)]
General Manager
Institute of Electrical and Electronic Engineers, Inc.
345 E. 47th Street
New York, NY 10017

List of Participating High Schools,
Colleges, and Universities

Morgan State University, Baltimore, Maryland
University of Maryland, Eastern Shore, Princess Anne, Maryland
Lincoln University, Lincoln University, Pennsylvania
Howard University, Washington, D.C.
Delaware State College, Dover, Delaware
Coppin State College, Baltimore, Maryland
Cheyney State College, Cheyney, Pennsylvania
Bowie State College, Bowie, Maryland
Washington Technical Institute, Washington, D.C.
Federal City College, Washington, D.C.
D.C. Teachers College, Washington, D.C.
D.C. Public Schools, Washington, D.C.
Montgomery County Schools, Maryland
Prince George's County Schools, Maryland
Fairfax County Public Schools, Virginia
Alexandria Public Schools, Virginia



HOWARD UNIVERSITY SPACE SYMPOSIUM/76

IN COOPERATION WITH NASA

CONFERENCE EFFECTIVENESS

NASA
National
Aeronautics and
Space
Administration

Please complete the following question and return to the monitor.

1. DID YOU DERIVE ANY BENEFIT FROM ATTENDING THIS SYMPOSIUM?

Yes _____ No _____

2. WAS ITS CONTENT OF VALUE TO YOU OR OF LITTLE OR NO VALUE TO YOU?

Valuable _____ Little Value _____ No Value _____

3. WHAT IS YOUR GENERAL EVALUATION OF THE INDIVIDUAL PRESENTATIONS DURING THE SYMPOSIUM?

Adequately presented _____ Inadequately presented _____

4. RANK ORDER THE WORKSHOPS YOU ATTENDED IN THE ORDER OF INTEREST TO YOU

NASA Display _____ Space Exploration and Application _____

Space and Careers for Minorities and Women _____

Space and Minority College Participation _____

5. DID YOU CONSIDER THE PHYSICAL FACILITIES ADEQUATE OR INADEQUATE?

Adequate _____ Inadequate _____

6. IF ANOTHER ACTIVITY SUCH AS THIS WERE TO BE HELD IN THE FUTURE WOULD YOU RECOMMEND THAT PEOPLE ATTEND IT?

Yes _____ No _____

7. WHICH OTHER TOPICS FOR WORKSHOPS WOULD YOU LIKE TO HAVE INCLUDED IN FUTURE SYMPOSIA? IF YOU SELECT ONE THEN LIST THE ONE THAT IT SHOULD REPLACE.

Recommend _____ be included as a workshop.

No recommendation, format is satisfactory _____.

DELETE

NASA Display _____ Space Exploration and Application _____

Space and Careers for Minorities and Women _____

Space and Minority College Participation _____

8. MAKE ANY COMMENTS OR SUGGESTIONS THAT YOU FEEL WOULD HELP TO MAKE THIS TYPE OF SYMPOSIUM MORE IN LINE WITH THE NEEDS OF PEOPLE IN YOUR CATEGORY.

MY CATEGORY:

- A. Faculty

University _____ High School _____

- B. Staff

University _____ High School _____

- C. University Students _____

- D. High School Students _____

- E. Other (specify)

COMMENTS: _____

SUGGESTIONS: _____

9. WHAT HAS BEEN YOUR PREVIOUS CONTACT WITH NASA?

General information literature _____

Media (print, radio, TV) _____

NASA TECHNOLOGY PUBLICATIONS

Tech Briefs _____

Tech Compilations _____

NASA TECHNOLOGY DISSEMINATION

RDC (Regional Dissemination Center) _____

COSMIC (Computer Software Management and Information
Center) _____

Public Sector Application Teams _____

Application Engineering Projects _____

10. DO YOU NOW UNDERSTAND HOW YOU CAN SEEK A CAREER IN SPACE TECHNOLOGY
IN:

NASA Yes _____ No _____

Private Industry Yes _____ No _____

WORKSHOP EFFECTIVENESS

Please complete the following questions and return to Evaluation Technologies, Inc., in the envelope provided.

My Workshop (Check one):

Space Exploration and Application ☐

Space and Careers for Minorities and Women ☐

Space and Minority College participation ☐

1. At the beginning of the workshop, the following objectives were announced. In terms of accomplishing these objectives, how do you evaluate the program?
 - a. To explore the question "How can aerospace activities be made more relevant to the current problems faced by minorities and women?"
 - b. To motivate more minority youths and women to select science and engineering as viable career choices.
 - c. To help NASA's efforts to recruit more minorities and women into its work force.
 - d. To stimulate a greater interest among minority professors and students in NASA's research programs at predominantly minority colleges.
 - e. To provide opportunities for minority aerospace scientists and engineers to interact with the community, particularly with youths at the college and high school levels.
 - f. To raise level of understanding in the community of NASA's Regional Distribution System for storage and retrieval of scientific and technical information.

	a	b	c	d	e	f
Excellent						
Very good						
Satisfactory						
Unsatisfactory						
Do not know						

2. What do you believe were the most significant strengths of this workshop?

3. What do you believe were the most significant weaknesses of this workshop?

4. List the workshops you think were most useful and least useful:

Most Useful

Least Useful

5. Please evaluate the following. (Use words like "helpful, adequate, inadequate, too long, etc.")

a. Length of workshop_____ b. Reading Material_____

c. Facilities and arrangements_____

d. Other_____

6. In terms of over-all helpfulness to participants how do you rate your workshop? (Circle your choice.)

Excellent

Very Good

Satisfactory

Unsatisfactory

7. Do you have other general comments or criticisms that would help in evaluating the workshop?

8. Should Howard sponsor future workshops? If so, how often?

Costs Incurred by ETI
(to June 25, 1976)

Labor.....	\$5,833.09
Printing.....	592.28
Tapes and Use and Operation of Recording Equipment.....	677.30
Local Travel.....	125.20
Miscellaneous.....	102.34
	<u>\$7,330.21</u>